A modularization mechanism for interactive proof-development.

We outline a version of classical set theory, designed to support automated proof development, which is indefinitely expandable with function symbols generated by Skolemization and encompasses a modularization mechanism named ‘theory’. ‘Theories’ can, in large-scale proof-development, play a role similar to the notion of object class in large-scale programming: we illustrate their use through several examples, ranging from mere utilities to a very flexible recursive definition scheme and to the formalization of customary induction schemes for freely generated domains. Case-study applications are the definition of a finite summation operation and the unique factorization theorem. The concrete realization of a proof-verifier embodying the ‘theory’ construct is along the way. (Received January 08, 2002)